Biotechnology Notes

June 1988

Biotechnology Notes, a compilation of news events, program activities, and meeting announcements, is prepared for members of the Committee on Biotechnology in Agriculture by the Office of Agricultural Biotechnology.

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ARS SCIENTISTS DEVELOP NEW VACCINE--Scientists at ARS's U.S. Livestock Insect Laboratory in Kerrville, Texas, have developed the first vaccine against parasitic cattle grubs. The vaccine should be ready for testing in a few months. Cattle grubs -- heel fly larvae -- are worldwide pests. Grubs damage hide and meat and adult flies annoy cattle, interfering with feeding and reproduction. They live 6-8 months inside cattle before cutting breathing holes through the hide and eventually merging as buzzing flies. Total annual losses in the United States are estimated in the millions of dollars.

Now, under a technology transfer agreement, a California biotechnology firm, Codon, will genetically engineer E. coli bacteria from grubs supplied by ARS scientists. The protein triggers an immune response in cattle that is fatal to grubs. A vaccine made from this protein will give calves protection that their parents develop only after they've been infested for a year or more.

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FOREST SERVICE SAVING THE POPLARS--Researchers at the Forest Service are working to save the hybrid poplar tree from a devastating disease. Using a non-recombinant biotechnology technique called somaclonal selection, researchers at the North Central Forest Experiment Station in St. Paul, Minn., have produced intensively cultured poplars that tolerate sepporia canker, a fungal disease that kills poplars early on in life. Dozens of somaclones are now being field tested and final results should be known in about two years.

In addition to being vulnerable to sepporia canker, the hybrid poplar can also die from surrounding weed growth. At the experiment station in Rhinelander, Wisc., another team of researchers has successfully used somaclonal selection to develop trees that tolerate certain weed herbicides at 10 times the lethal concentration. Success using somaclonal selection has led the Forest Service to apply for a process patent.

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NEW ERS STUDY ANALYZES MARKET INFLUENCES--ERS just completed a study of the forces likely to have a major impact on the biotechnology industry. According to the report, which will be available in draft form June 15, patent laws will be important because they will determine a company's ability to recoup its investment in research. Product liability law and the availability of liability insurance will also influence the types of biotechnology applications that are investigated by researchers. Government regulation will affect the demand for and supply of specific biotechnology products. As a result of these factors, it is likely that large agrichemical companies will be in a position to dominate the agricultural biotechnology market. If this proves to be the case, input costs for agricultural producers may decline.

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APHIS INITIATES NEW POLICY--APHIS has begun publishing in the Federal Register public notices of those permits the agency is reviewing for release into the environment. The purpose of the notices is both to inform the public and to provide an opportunity for individuals to express their views.

During May, APHIS issued four permits for field testing, including two to Monsanto Co. and two to Agrigenetics Advance Science Co. The Monsanto permits were for genetically engineered tomato plants that tolerate certain insects and genetically engineered tomato plants that tolerate glyphosate. The Agrigenetics permits were for genetically engineered tobacco plants that resist alfalfa mosaic virus and genetically engineered tomato plants that resist lepidopteran insects.

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CSRS CONDUCTING SITE VISITS--Congress included in USDA's FY'88 budget funding for feasibility studies to be conducted at six centers related to biotechnology. Each center is concerned with a different aspect of agricultural biotechnology or bioprocesses. They are located at Texas A&M University, Rutgers University, Virginia Polytechnic Institute and State University, the University of Florida, the University of Georgia, and Oklahoma State University. The budget also fully funded a seventh center at the University of Arizona, which will be peer reviewed in early June.

CSRS has been given responsibility for making the site visits and has already completed four. The results will be reviewed by USDA and OMB before going to Congress for final action.

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ES COMMISSIONS WHITE PAPER--The Extension Service commissioned Dr. Frank Wolek to assess the role of the Cooperative Extension Service in biotechnology. Wolek, a professor of finance and management at Villanova University, believes the Cooperative Extension Service should emphasize its skills in stimulating researchers to undertake specifically targeted studies. It should also be the focus for the tasks of developing, evaluating and demonstrating new systems of agriculture. As the "systems engineers" of agriculture, the Cooperative Extension Service should play the leading role in defining possible systems, encouraging producer and community organizations, developing systems in their early stages and educating others on commercial development and implementation. Wolek will present his white paper to the Extension Committee on Organization and Policy later this summer.

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LEGISLATIVE NEWS--On April 29th, Congressman Scheuer introduced H.R. 4502 to establish a national advisory commission to promote and coordinate scientific information and research on biotechnology, also called the "Biotechnology Science Coordination and Competitiveness Act of 1988." The bill would establish a National Biotechnology Policy Commission represented by each Federal agency involved in research relating to biotechnology, representatives from the university research community, national foundations, and other organizations. The commission would review and appraise the various programs and activities of the Federal government relating to biotechnology, including the amount and type of biotechnology-related research conducted or funded by Federal agencies, review of non-confidential privately funded research activities, and the development of commercial products. The bill was referred to the House Committees on Energy and Commerce; and Science, Space and Technology.

Chairman Scheuer also recently introduced H.R. 4335, the National Biological Diversity Conservation and Environmental Research Act. This bill would create a national policy towards conserving biological diversity and make such a policy a national priority. Biological diversity would be made an explicit part of environmental impact statements prepared under the National Environmental Policy Act and require a coordinated Federal management strategy for maintaining biological diversity. The bill has been referred to the subcommittee on Natural Resources, Agriculture Research and Environment, as well as the Merchant Marine and Fisheries committee. Hearings will be held June 9. (See "Calendar of Meetings" on page 6 for more details.)

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OICD SEEKS GUIDANCE ON INTERNATIONAL BIOTECHNOLOGY--The Office of International Cooperation and Development, whose mission is to administer international cooperation and development in agriculture, will be working with OAB to plan guidelines for international cooperation in biotechnology. A one-half day workshop is being planned sometime this summer.

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IN CASE YOU WEREN'T THERE . . .

Monsanto sponsored the first conference on "U.S. Competitiveness in Agricultural Biotechnology" on April 14 in Ames, Iowa. Dr. Alvin Young, one of six roundtable participants, said the meeting focused on the use, delivery, availability, and safety of biotechnology products. The greatest concern, however, centered on the public acceptance of food and other products produced through biotechnology. The group also said biotechnology may help U.S. farmers become more efficient and find new uses for agricultural products. Some questioned whether Europe, which has raised environmental and safety concerns about biotechnology, would adopt the new technologies before the United States. The attendees agreed that Federal regulations for biotechnology are adequate and that an additional state regulatory structure is not required.

At the **Human Genome Subcommitte Meeting** held May 4 in Washington, D.C., attendees reviewed the recent Office of Technology Assessment report, "Mapping Our Genes -- The Genome Projects: How Big, How Fast." In general, Congress intends to be involved during the human genome effort, will discourage Departmental rivalry, and is concerned with the ethics of the project. USDA is particularly interested in the developing technology and methodology that will be applicable to the mapping of plant genomes. Implications to agriculture include knowledge about the genes that control or influence yield, time to maturation, nutritional content, resistance to disease, insects and drought, and other factors in the production of crops.

The last of four regional **USDA conferences** on "Agricultural Biotechnology and the Public," was held May 16-18 in Minneapolis, Minn. By far the largest attended, the meeting drew more than 200 people from the media, academia, agribusiness, and public interest groups. Keynote speaker Dr. Kenneth Gilles underscored the theme of the conferences: "Our focus at these meetings is on public understanding because an informed public will be a key factor in understanding and acceptance of testing in the environment in the near term, and in product acceptance in the future".

"Catching the New Wave:" A **Biotechnology and Extension Program"** was the subject of a conference held in Lansing, Mich., May 12 and 13. Participants addressed the impact of biotechnology on extension personnel and mechanisms for building biotechnology into extension programs. Both before and after the meeting, attendees were asked to complete questionnaires that tested their knowledge of biotechnology. The breakout sessions centered on consumer protection, environmental concerns and opportunities, USDA research and regulation activities, industry/university relationships, economic issues, social and political influences, and risk assessments.

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NEW PUBLICATIONS:

"Biotechnology: An Introduction". An easy-to-read, 32-page brochure covering biotechnology techniques; applications to humans, plants, animals, insects, and microbes; safety issues; and regulatory reviews. Write to: American Council on Science and Health, 47 Maple St., Summit, N.J. 07901, or call (201) 277-0024.

Conference Proceedings of the National Conference on Collaborative Initiatives in Biotechnology, held Nov. 1-3 at the National Institutes of Health in Bethesda, Md. Contact: The National Technical Information Service on (703) 487-4650.

"New Developments in Biotechnology: Field-Testing Engineered Organisms: Genetic and Ecological Issues". The third report in a series prepared by the Office of Technology Assessment for the House Committee on Energy and Commerce and the House Committee on Science, Space, and Technology. Topics covered in this report include the criteria for review of planned introductions for potential risk, administrative mechanisms, and the research base supporting planned introductions. To purchase a copy, call OTA at 275-3054.

The West Germany Ministry of Agriculture has published a brochure detailing that government's new plant protection law which became effective January 1987. Available in German from Bundesernahrungsministerium, Pressestelle, Postfach 1402 70, 5300 Bonn 1, West Germany.

"The UK Agricultural Market." An in-depth look at the agrichemical market in the UK, farming, regulations, government-sponsored research, biotechnology. See Marti Asner, Room 508-A, Administration Bldg., for application blank.

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CALENDAR OF MEETINGS FOR JUNE:

June 1: Public Perception of Health Risks. American Medical Association. Washington, D.C., from 10:30 a.m. to 2:00 p.m. Contact: Dr. Wm. R. Hendee, Chairman at (202) 789-7400.

June 1-2: "The Future of Commercial Biotechnology." Co-sponsored by the American Enterprise Institute and the Brookings Institution. Washington, D.C. Contact: Carol Delaney at (202) 797-6094.

June 2-5: Third Annual American Society for Microbiology Conference on Biotechnology. Arlington, Va. Contact: Karen Johnson at (202) 833-9680.

June 5-11: ACHEMA 88 (22nd International Meeting on Chemical Engineering and Biotechnology). Frankfurt am MAIN, F.R.G. Contact: DECHEMA, ACHEMA Organization, P.O. Box 97 01 46, D-6000, Frankfurt 97, F.R.G.

June 5-18: Molecular Biology and Biotechnology Summer Workshops, sponsored by New England Biolabs Inc., Northampton, Mass. Call: (413) 585-3857.